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Error! No table of contents entries found.FCC Radio and
Television Interference Statement for a Class 'B' Device

This equipment generates and uses radio frequency energy and if not
installed and used properly, that is, in strict accordance with the
manufacturer's instructions, may cause interference to radio and television
reception. It has been type tested and found to comply with the limits for a
CLASS 'B' computing device in accordance with the specifications in
Subpart B of FCC Rules and Regulations (as outlined in the Code of Federal
Regulation, Title 47), which are designed to provide reasonable protection
against such interference in a residential installation.

If this equipment does cause interference to radio or television reception,
which can be determined by turning the equipment off and then on, the user
is encouraged to try to correct the interference by one or more of the
following measures: 1) reorient or relocate the receiving antenna;
2) increase the separation between the equipment and the receiver;
3) connect the equipment into a different outlet so that the equipment and
receiver are on different branch circuits; 4) ensure that the card mounting
screws, connector attachment screws and all ground wires are secured and
tight; and 5) consult the dealer or an experienced radio/TV technician for
help.

Changes or modifications not expressly approved by the party responsible
for compliance could void the user's authority to operate this equipment.

This device complies with Part 15, of the FCC Rules. Operation is subject to
two conditions: (1) this device may not cause harmful interference, and (2)
this device must accept any interference received including interference that
may cause undesired operation. Its FCC identification number is:

IMJEQMAN

Note: This product was FCC certified under test conditions that included
the use of shielded I/O cables and connectors between system components.
To be in compliance with FCC regulations, the user must use shielded
cables and connectors sand install them properly.

This product also complies with European CE requirements.

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Introduction

Congratulations on the purchase of your new Midiman EQMan Programmable Graphic Equalizer! The EQMan's revolutionary hardware and software design allows your PC to apply graphic equalization to any stereo audio source under the complete control of your computer. Its features include:

Stereo inputs and outputs,

7-band analog graphic equalization per channel,

Individual 128-position volume faders per output channel for accurate control of your music levels,

Auxiliary stereo inputs mixed with EQ output stage,

Requires no IRQ or DMA resources,

Completely controllable by MIDI software,

Windows-compatible MIDI driver included,

Windows Remote Control software included.

If you have any questions, comments, or suggestions about this product or any MIDIMAN product, we invite you to contact us directly at:

MIDIMAN
Technical Assistance: **(818) 445-8495**
45 E. St. Joseph Street
Arcadia CA 91006-2861

Fax: (818) 445-7564
BBS: (818) 445-8549
CompuServe: MIDIBVEN Forum (Section 2)
ID# (for direct E-mail):   75300,3434
Internet Email   midiman@midifarm.com
World Wide Web:
     http://www.midifarm.com/midiman

We strongly urge you to thoroughly read this manual. Please read all of the sections in this manual to completely understand EQMan operation and its wide range of application.

EQMan Features

The EQMan can be used to enhance a number of line-level audio applications including the following:

- Use the programmability of EQMan in the effects loop of your mixing board to automate mix downs.

- Use the EQMan to equalize the output of a PC soundcard.

- Use the EQMan with a MIDI sequencer to do automated filter "sweeps" for interesting effects.

- Use the Dual Channel capability to Equalize two different instruments such as a keyboard and one side of your CD player to practice along with your favorite artists.

The three jacks on the rear of the EQMan are used to connect the unit to any standard stereo line-level audio setup. All three are standard multimedia-sized 1/8" stereo jacks. 1/8" stereo jacks were designed into the EQMan instead of RCA jacks because of their acceptance in the multimedia market and due to space limitations on the flange of the standard PC-sized adapter card. The three jacks, from top to bottom, are "Main In," "Main Out" and "Aux In".

If your gear uses stereo 1/4" phone jacks or pairs of mono 1/4" phone jacks, you may get adapters to go from 1/4" to 1/8" plugs. These are available at most electronics stores. Make sure you buy good quality shielded cables and be aware of whether you need mono, stereo, and/or mono/stereo converters.

"Main In" Jack

The "Main In" jack receives input from a line-level stereo source such as the output of an audio mixer, PC sound card, or even a CD player. The audio signals from this jack pass through the equalizer stage of the board. On exit from the equalizer stage, the signal level is controlled by the EQMan's stereo volume control circuitry.

"Aux In" Jack

The "Aux In" is an auxiliary input which bypasses the equalizer stage of the board. Its line-level stereo signal feeds directly into the EQMan's stereo volume control circuitry, where it is mixed with the Main In signal that exits the equalizer stage. Because the Aux In audio signals bypass the equalizer stage of the board, they are not affected by the equalizer settings of EQMan.

"Main Out" Jack

Main Out is a line-level stereo output that may be connected to any device that can accept a line-level stereo signal, such as a sound card line input, an input on your mixer, or your tape deck. The audio signal at the Main Out is sum of the equalizer section output (which Main In passes through) and the Aux In signal.

Fig. 0 here

EQMan Block Diagram

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Hardware Installation

Each adapter card in a computer must reside at a unique "address" in order for a computer to function properly. If two or more adapters are set to respond at the same address (this is known as an "address conflict"), the computer will operate in a random or inconsistent manner, if at all. To avoid address conflicts, the EQMan board has a configurable address, allowing it to be adjusted to work properly in practically all personal computers. Address configuration is done by installing/ uninstalling selected jumpers in the lower left-hand corner of the board.

IMPORTANT: The address setting for the EQMan must be determined and properly set on the card <u>before</u> you install the card into your computer. Therefore, please read and follow the step-by-step instructions given in this section before installing the card in your computer.

Address Configuration

It is vital to make sure the "Address" is correctly set on the EQMan card. The default factory setting for the card is *Address 300h*. Address 300h was carefully chosen as the factory default address and should not conflict with most installations. If you <u>do not</u> have a sound card, MIDI interface card, network card or another EQMan already installed in your computer, then chances are very good that you can safely install the EQMan with the jumpers set to the factory default address. If this is the case, install the card in an available 8- or 16-bit slot and run the provided diagnostic software. If the card passes all diagnostic tests, you may then install the Windows driver (see "Windows" section) and begin rocking with EQMan.

If you <u>do</u> have a sound card, MIDI interface or network card, you are probably still safe at the factory default address. In some systems, however, the diagnostic software will detect an address problem and then you will have to do a little more work to uncover just which addresses are available for use by the EQMan.

The first step in this detective work is to determine which port addresses are actually available in your computer. You may already know which addresses are available, or you may need to run the utility program FINDPORT.EXE on the included diskette. This program, as well as the diagnostic software, should be run from DOS for best results. That means <u>exit Windows to DOS</u>, not run the programs from a "DOS box" within Windows. If Windows is in memory when running diagnostics, it usually impairs a diagnostic program's direct access to hardware -- this causes diagnostic software to give uncertain results.

The program FINDPORT.EXE does its best to determine port addresses available for use with the EQMan card. Choose one of the free addresses reported by FINDPORT and use the chart below to set the EQMan ADDRESS jumpers to that address. It's also a good idea to write down the selected address as well as some alternates. You may need these addresses later to run the diagnostics and install the EQMan Windows Driver.

ADDRESS Jumper Assignments

Address (Hex)	1	2	3	4	5	6	7	Comments
200	In	In	In	In	In	In	Out	Joystick
208	Out	In	In	In	In	In	Out	
210	In	Out	In	In	In	In	Out	
218	Out	Out	In	In	In	In	Out	
220	In	In	Out	In	In	In	Out	Sound Card
228	Out	In	Out	In	In	In	Out	
230	In	Out	Out	In	In	In	Out	
238	Out	Out	Out	In	In	In	Out	
240	In	In	In	Out	In	In	Out	
248	Out	In	In	Out	In	In	Out	
250	In	Out	In	Out	In	In	Out	
258	Out	Out	In	Out	In	In	Out	
260	In	In	Out	Out	In	In	Out	
268	Out	In	Out	Out	In	In	Out	
270	In	Out	Out	Out	In	In	Out	
278	Out	Out	Out	Out	In	In	Out	LPT2
300	**In**	**In**	**In**	**In**	**In**	**Out**	**Out**	**Factory Default**
308	Out	In	In	In	In	Out	Out	
310	In	Out	In	In	In	Out	Out	
318	Out	Out	In	In	In	Out	Out	
320	In	In	Out	In	In	Out	Out	
328	Out	In	Out	In	In	Out	Out	
330	In	Out	Out	In	In	Out	Out	Sound Card /401
338	Out	Out	Out	In	In	Out	Out	
340	In	In	In	Out	In	Out	Out	
348	Out	In	In	Out	In	Out	Out	
350	In	Out	In	Out	In	Out	Out	
358	Out	Out	In	Out	In	Out	Out	
360	In	In	Out	Out	In	Out	Out	
368	Out	In	Out	Out	In	Out	Out	
370	In	Out	Out	Out	In	Out	Out	
378	Out	Out	Out	Out	In	Out	Out	LPT1

Factory Default Jumper Settings

The following diagram shows the ADDRESS jumper blocks on the EQMan. The factory default ADDRESS is 300h.

Fig. 1 here

Factory Default Jumper Settings

Physical Installation

The EQMan should be installed into your computer only after a potential address setting for the card has been determined and properly set on the card itself. Make sure you have performed the above instructions related to address selection and that the EQMan jumpers have been set accordingly. Only then should you proceed and physically install the EQMan. When ready to install the EQMan in your computer, follow these steps:

1. Turn off your computer.
2. Remove the cover and position the computer so you have easy access to the slots.
3. Select the slot in which you wish to place your EQMan card (make sure that it is an ISA slot. If you don't know what "ISA slot" means, check the owner's manual of your computer) and remove the metal bracket that covers the access hole on the back of the computer.
4. Position the EQMan card over the slot and fit the card loosely over it with the EQMan card upright. Then press the card downward into the slot gently but firmly until the card is completely and squarely seated in the slot.
5. Screw the EQMan's metal bracket down into the screw hole on the back of your computer.
6. Place the cover back on your computer.
7. If you want, at this point, you may connect the audio cables to the back of the EQMan. We recommend that you label the free ends of the cables so you won't have to look at the back of the computer if you have to re-patch your audio devices later.
8. Move your computer back to its original position. You may now turn on your computer.

Diagnostic Software

Included with the EQMan is DOS diagnostic software. After the EQMan has been configured and physically installed in your computer, you should run the diagnostic software file EQMNDIAG.EXE -- its purpose is to verify proper installation and operation of the EQMan card.

IMPORTANT: Because Windows may disable direct access to the EQMan hardware and cause the diagnostics to malfunction, the DOS diagnostic program EQMNDIAG.EXE should only be run from the

DOS prompt. If you are in Windows, exit Windows completely, to DOS, then start the program from the DOS prompt.

When you run EQMNDIAG.EXE, you will see the main screen pictured below. You may change the cursor (=>) line by pressing your computer's up/down arrows, then press the <Enter> key to cycle through various parameter settings for that line. As a shortcut you may also select a line by pressing the key associated with the first letter of the desired line. For example, to shortcut to the Settings line, press the 'S' key on your computer's keyboard.

Fig. 1.5 goes here

DOS Diagnostics Menu

In order for the diagnostics to run properly, you must set the program's BASE ADDRESS to match the base address set in the jumper block of the EQMan. Place the (=>) cursor on the Base Address line of the program and press <Enter> to toggle through the BASE ADDRESS settings until you match the setting on your card.

Hardware Delay is used to tweak the speed at which the computer sends commands to the EQMan. The factory default is 5 and will work for almost all computers.   If the diagnostics don't appear to operate properly, you may have to increase the value to 10 or more. For more information regarding hardware delay, see the Drivers Advanced Setup section.

Passes sets the number of times the board will be tested. Try Passes=1 until you pass the tests once, then you may increase the Passes setting to a higher value.

Aux In Tests runs a Volume Control test on the Auxiliary Input jack signal. Before choosing this test, connect a known good audio source to the Aux In jack of the EQMan. As the Aux In test runs, you will hear the left and right channels' volumes individually raised and lowered. Listen to the audio output and verify it with what is being displayed on the computer screen.

IMPORTANT: Before running the Aux In Tests or Main In Tests, the EQMan Main Out jack must also be connected to an amplifier, mixer, or other device that will allow you to monitor the audio output through speakers or headphones.

Main In Tests runs an EQ and Volume Control test on the Main Input jack signal. Before choosing this test, connect a known good audio source to the Main In jack of the EQMan. As the Main In test runs, you will hear the left and right channels' volumes individually raised and lowered. Next you will hear the test cycle through the bass, mid-

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range, and treble frequencies. Listen to the audio output and verify it with what is being displayed on the computer screen.

EQMan Software

The EQMan requires software in order to be a useful tool. There are three groups of software included with the EQMan: Diagnostics, Windows Remote Control, and the Windows drivers. Diagnostic software is discussed in the Installation part of this manual, so this section will address the operation and relation of the other software items.

Drivers

MIDI application software communicates with the EQMan via software "drivers." A software driver handles the hardware-specific details of the EQMan and frees the MIDI application from having to know the "specifics" of the hardware. If an EQMan driver is not installed, most applications will not be able to manipulate or control the EQMan in any way.

NOTE: The DOS diagnostics supplied with the EQMan have their own EQMan "drivers" built-in and therefore can control the EQMan without having to install other specific drivers beforehand.

On the included EQMan Drivers and Utilities diskette, Midiman supplies the EQMan Windows drivers. These drivers enable the use of the EQMan with Windows 3.1/3.11 and Windows 95 programs that comply with the Windows Multimedia driver standards.

IMPORTANT: The EQMan Windows software drivers must be installed in order for the EQMan to be used effectively with Windows applications.

If you encounter problems using the EQMan with Windows, verify that the EQMan Windows driver is installed. In Windows this can be done via the Windows Control Panel. For further information on setting up drivers under Windows, see the Windows Driver Operation section below.

Because Windows software and DOS software behave differently, DOS applications can not rely on the same set of drivers as Windows. Instead each DOS application requires its own unique (and usually proprietary) software driver for each hardware device. Consequently, the EQMan can only be used with a DOS program if a specific EQMan driver is written for that program. Please contact the developer of your favorite DOS-based application for availability of EQMan driver support.

Windows Remote Control Software

Included with your EQMan is Windows Remote Control Software. The Remote Control software is actually two separate applications, an EQ application and a Volume Control application, which allow you to configure and control the EQMan card. These applications are used to change EQ and Volume settings on-the-fly, as well as act together as an EQ/Volume "program" editor/librarian application.

Windows 3.1/3.11 Driver Installation

If there is no current EQMan Windows MIDI driver installed in your system simply follow these steps:

1. Start Windows as you usually do.
2. Click open the *Main* group.
3. Click open the *Control Panel.*
4. Click on the *Drivers* icon.
5. Check for a "Midiman EQMan" entry. If one exists, then the driver has already been installed -- click on "Midiman EQMan" to highlight it, then click the "Setup" button and proceed to Step 10. If however the EQMan driver is not present, please continue to the next step.
6. Click on the "Add" button.
7. Select the "Unlisted or Updated Driver" entry and push the "OK" button.
8. You will be prompted for a disk drive from which to read the driver. Insert the EQMan drivers and applications disk into your floppy disk drive and, if necessary, enter the disk drive specification in the prompt box. Click on OK.
9. When the "Add Unlisted or Updated Driver" window pops up, select "Midiman EQMan" and click on OK.
10. The EQMan Driver Setup dialog box will appear (see figure below). Select the proper Base Address that matches the address jumper settings of your EQMan.
11. Once the Base Address is selected, verify that the Enable MIDI Driver checkbox is checked and then click on OK.
12. In order for Windows to install the new driver completely, you will be required to exit and restart Windows.
13. After restarting Windows, install the supplied Windows Remote Control software (see Installing Remote Control Software section) and verify that the Windows drivers are functioning properly.
14. Once you have working Windows drivers, run your favorite MIDI or audio recording application(s). You will need to configure each application in order to communicate with the EQMan. Please see the Configuring Windows Applications to Use the EQMan section for further information.

Windows 95 Driver Installation

1. Open the Control Panel and select "Install New Hardware." Then press the "Next>" button.
2. When prompted to automatically search and detect installed hardware, click the "No" radio button. Then click "Next>".
3. Scroll down in the list box and select "Sound, video and game controllers." Click "Next>".
4. Click on the "Have Disk..." button.
5. Insert the Midiman driver disk in your floppy drive. If necessary, enter the disk drive specification in the prompt box, then click on "OK".
6. Select the Midiman EQMan driver from the list and click on "OK".
7. Click "Finish". The remainder of the Windows 95 installation is identical to the Windows 3.1 Driver Installation from Step 9 on.

Installing the Remote Control Software

The EQMan Remote Control applications should be installed from within Windows. Once in Windows, insert the EQMan Control diskette into your disk drive. If in Windows 3.1/3.11, pull down the Program Manager "File" menu and select "Run...". Otherwise, Windows 95 users should press the Windows 95 Start button and select "Run..." from that menu. When "Run..." prompts you to enter a command line, type either A:SETUP.EXE if your diskette is in drive A:, or B:SETUP.EXE if your diskette is in drive B:. Now, select the OK button. The SETUP program will automatically guide you through the installation process. When asked to enter a subdirectory for the EQMan product files, we suggest using the default directory that is automatically presented to you. When installation is complete, SETUP will create a MIDIMAN APPLICATIONS group (if not already present). To this group SETUP will add an icon for the EQ Remote Control and another icon for the EQ Volume Control. If this is not the only Midiman product that you have installed in your system, you may see other icons from other Midiman products in this group as well.

Once installation is complete (and the Windows drivers have been installed as well), you may run the EQ and Volume applications by selecting them in the Midiman Applications group and double-clicking the mouse, or pressing the <Enter> key on your PC keyboard.

Windows Driver Operation

Occasionally some users may need to make fine adjustments or customizations in the Windows drivers. This is accomplished through the Windows Control Panel. Within the Control Panel is a Drivers applet (in Windows 95 choose the Multimedia applet) that allows you to select an installed Windows driver and modify its settings. Open the applet, highlight the Midiman EQMan driver selection and click on the Setup button. This will open the Driver Setup dialog box.

Driver Setup from Windows Control Panel

The EQMan Driver Setup dialog box is shown below. It allows you to set the Base Address the driver expects to find the card at, as well as enable/disable the driver and driver warning messages. The Base Address in this dialog must be set to match the jumper configuration of your board or else the driver will not be able to control your card. If you choose to disable the MIDI driver, the EQMan driver will not load when you enter Windows. This may be handy in case you remove the card from your machine but don't want to go to the trouble of uninstalling the EQMan drivers and then reinstalling them when the card is placed back into the computer. Disable Warning Messages allows you to squelch any warning messages that the EQMan driver will display, such as "card not found" when entering Windows.

Fig. 2 goes here

EQMan Driver Setup Dialog Box

Selecting the "Advanced..." button will pop up the Advanced Driver Setup dialog box. Selecting the "About..." button, on the other hand, will display the driver software version, the virtual driver software version (a "hidden" component of the Windows driver), and copyright information.

IMPORTANT: The Virtual Driver version will not be displayed if you are running Windows 3.1/3.11 in Standard Mode. Otherwise, if you are running Windows 95, or Windows 3.1/3.11 in 386 Enhanced Mode, you should see the virtual driver version displayed. If not, then the Base Address is probably not set properly or the card is not properly installed.

Advanced Driver Setup

The Advanced Driver Setup dialog box pictured below is used to setup some of the more specific information about the EQMan. Users who are using the Remote Control Software to set the EQ manually need not concern themselves with this dialog box (unless the Hardware Speed requires adjustment). This dialog box applies mainly to those who will be controlling the EQ via MIDI programs.

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Fig. 3 goes here

EQMan Driver Advanced Setup Dialog Box

The Midi Channel Assignment is used to set the MIDI channel on which the EQMan operates. To a MIDI application such as a sequencer, the EQMan looks just like any other MIDI device (i.e., a synthesizer or drum machine) and responds on its own MIDI channel. The MIDI channel is important when sending MIDI program change, volume, pan and continuos controller messages to the EQMan. The default MIDI channel is 1.

The Hardware Speed is used to tweak the speed at which the computer sends commands to the EQMan. Some faster machines may require an additional Delay Factor of 10 or more, but most machines will only require a Delay Factor of 5 or less. The factory default is 5 and will work for almost all computers. Keeping the Delay Factor low decreases the amount of time the computer spends servicing the EQMan, although there is very little difference between a factor of 2 or 5. If uncertain how to set this Delay Factor, always error on the high side, i.e., guess high! You can reduce the factor slowly over a period of time as long as the card appears to be working properly.

The MIDI Controller Assignments set the MIDI controller numbers that each band of the EQ will respond to. The MIDI controller numbers 102 through 119 are defined by the MIDI Specification as user-defined and are therefore good choices for assigning to EQMan EQ bands. Note that each band may be set to respond to its unique controller number, or bands may share controller numbers, allowing them to be controlled in tandem. The factory configuration sets different controller assignments for each frequency but pairs each left side frequency with its matching right side frequency. For more information regarding the use of continuous controllers with EQMan, see the MIDI Control of EQMan section.

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Remote Control Software Operation

The Remote Control Software is actually two separate applications: the EQMan Remote Control and EQ-Vol.   EQ-Vol controls the output levels of the EQMan board only. EQMan Remote Control controls all graphic EQ settings and indirectly the output levels. It is also the home of the EQMan program editor/librarian function that allows you to load/configure/store sets of different EQ programs.

An EQ program contains settings for all EQ bands and volume settings. An EQ "map" contains a set of 16 of these programs. EQ maps may be stored and loaded from disk files, as well as transferred to EQMan "Rom" for access by MIDI sequencers and other applications (see Midi Control of EQMan section for more info).

When running the EQMan Remote Control, there is an option to show EQ-Vol as well. This is the most typical mode of operation. In this mode, whenever you open or close the Remote Control, EQ-Vol opens and closes as well. EQ-Vol position also tracks the position of the Remote Control. Below is pictured the Remote Control and EQ-Vol running together.

Fig. 4 goes here

Remote Control and EQ-Vol Running Simultaneously

Slider Bars and Volume Faders

The EQMan's vertical scroll bars emulate the "sliders" and "faders" on a hardware equalizer. Changing the EQ slider positions (by dragging them up or down with the mouse) controls each EQ frequency band that you wish to boost (up to +12dB) or cut (as much as -12dB). Likewise, the volume on the EQMan left and right channels may be set by dragging their respective rectangular faders. The group of seven leftmost EQ sliders control the left channel of the EQMan and the rightmost seven sliders in the Remote Control, control the right channel. On the Volume Control, the left slider controls the left output level

Control/Status Bar

The gray Control/Status Bar at the bottom of the application is used to access special functions as well as display current information. Elements of the Control/Status Bar are from left to right: the File Button, the Rom button, the Options button, the current program status display, the Lock button, the Flat button, and the Map button. The EQ-Vol application also has its own Lock button and adds a Mute button.

The File Button

The File Button pops up a menu of selections: Open File..., Save File..., About..., Exit.

Open File...
Lets you select a stored program map file (a group of 16 EQ programs) to load from disk. The suggested default extension for a program map file is .EQM although you may name them whatever you choose.   The included file FACTORY.EQM contains some factory default EQ programs for your use.

Save File...
Allows you to save the current map (16 programs) to disk. When prompted for a filename, it's convenient to use a descriptive name to make it easier when searching for specific maps later.

About...
Pops up copyright information as well as the current software version number.   If the application has properly identified the installed EQMan driver, it will also display the version number of the EQ Manager, a software component of the EQMan driver. The version numbers are useful in technical support situations so please have them handy when contacting the technical support department.

Exit
This menu choice exits the application. You will be prompted with an "Are You Sure?" dialog which allows you to exit the application, or cancel and continue using the application.

The Rom Button

The Rom Button pops up a menu of selections regarding the EQMan "Rom": Read One, Read All, Write One, Write All, and View Rom Programs. A description of EQMan Rom operation is included in the MIDI Control of EQMan section.

Read One
This choice allows you to read any program in Rom (the Rom location) to any program in the current Remote Control program map (called the App location). When you read a Rom program, it will completely overwrite your App location, so be careful about where you read <u>to</u>.

Read All
Reads all programs from Rom to the application's program map. This function completely overwrites all App programs, so use it carefully. If you wish to keep your current programs before reading

the Rom, save the current programs to disk as a map file before using the Read All function.

Write One
Allows you to select and write any App program to and EQMan Rom program. The selected EQMan Rom program is overwritten.

Write All
This choice writes all App programs to Rom where they can be accessed via other MIDI applications. All Rom program locations are overwritten.

View Rom Programs
This selection displays the current application program map. The names and location assignments of all programs currently in EQMan Rom are displayed. This dialog is for information only and no programs are overwritten in App program map and Rom. Below is an example of the information displayed when View Rom Programs is selected.

Fig. 5 goes here

Displaying the Current Rom Program Map

The Options Button

The Options Button allows you to configure the Remote Control application and set personal preferences. The Options menu has three selections: MIDI Channel, Remote Update Speed, and Volume Fader App preference.

MIDI Channel
Selects the MIDI channel that will be used to read and write MIDI data to the EQMan Windows driver. This channel should be set identical to the MIDI Channel setting in the Windows Driver Advanced Setup dialog box. The factory default MIDI channel setting is 1 and will work in most cases.

Remote Update Speed
When another MIDI application (a sequencer for example) is accessing the EQMan, any changes that application makes to the EQ/Volume settings are displayed on the EQMan Remote Control (if it is running). These settings are updated either immediately, or every 50 to 500 milliseconds (1 millisecond = 1/1000th of a second). The factory default setting is 50mS and should suffice for most users. Choose "immediate" for smoother display action. The faster the update rate, the more CPU time is required to service the display. In some cases a speed that is too fast can impact overall system performance. If you notice the Remote Control slowing your system

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down during sequences sending MIDI EQ commands, either choose a slower update speed or close the Remote Control application altogether.

Volume Fader App
You may choose to display the Volume Fader application (EQ-Vol) or not. If "Show" is selected, EQ-Vol is opened automatically when you open the Remote Control and closed when the Remote Control is closed.

The Current Program Status

In the middle of the control/status bar, the current program status is displayed. When you load or select a program from within the Remote Control application, its name is displayed here, as well as the program number in brackets, i.e. [01] for program 1. If any changes are made in the program, an exclamation point "!" will appear to the left of the name. This indicates the program has been modified but not yet saved to disk or Rom. Saving the program will clear this exclamation point.

The current program status area is also an active region of the screen that you may double-click with the mouse. The result of a double-click is to pop up a list of current programs loaded in the Remote Control. The current program in this list will have a check mark to the left of its name. You may select another program from this list if desired. A sample list is pictured below:

Fig. 6 goes here

Program List from Double-Clicking Current Program Status Area

The Lock Button

The Lock button enables/disables channel "ganging" of the faders. The button will display "Locked" when the left and right channels are ganged, and will display "Lock" when they are not ganged. Ganging allows you to control both the left and right channels at the same time by dragging the fader or slider of one channel. Typically, it's useful to gang the faders when working with audio that is well-balanced (tone as well as volume) between the left and right channels. On the other hand, one channel may contain totally different material or require tweaking -- use the faders in an unganged fashion to set the left and right channel parameters to their own unique settings.

The Flat Button

The EQ Flat button automatically flattens (sets gains to 0 dB) all EQ bands. This basically acts as an EQ bypass and does not affect the volume settings. When Flat is pressed again, the previous EQ settings are restored. In effect, the Flat button is a handy way to compare your current EQ settings with a bypass setting.

The Map Button

The Map button accesses the current program map in Remote Control application memory. When pressed, it pops up the following dialog box:

Fig. 7 goes here

Local Program Change Map

Each program location and its name are displayed. The radio button next to the current program is selected. Select another program by clicking on the radio button next to it and press OK. You may also rename a program by clicking on its radio button and then pressing Rename. You will be prompted for a new name of 16 characters or less.

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Configuring Windows Applications to Use EQMan

Once the Windows drivers for the EQMan have been installed, you will need to configure your MIDI applications to take advantage of the EQMan Windows drivers.

NOTE: The supplied Remote Control and Volume applications automatically detect the presence of the drivers and do not to be specially configured for operation.

The manner in which each application is configured for MIDI is unique to that application, so it is impossible to go over all possible scenarios here. However, most Windows MIDI applications have a configuration or settings dialog box (sometimes called "MIDI Devices" or "MIDI Setup") that specifies the MIDI input and output ports the program will be communicating with. If your EQMan drivers are properly installed, you should see the "Midiman EQMan Input" listed as a possible MIDI input driver, and "Midiman EQMan Control" listed as a possible output driver. You may or may not need to select both drivers. The "Midiman EQMan Control" output driver is used to select EQ programs and modify EQ settings via MIDI. It is most commonly used. On the other hand, the "Midiman EQMan Input" driver is used to receive MIDI system exclusive information from the EQMan. If you do not plan to dump the EQ settings into your sequencer, you will not need to select this driver.

MIDI Control of EQMan

Each adjustable parameter of the EQMan is controllable via MIDI messages. These messages must be sent to the EQMan software driver and must be on the proper MIDI channel for the EQMan to recognize them. These MIDI messages take the form of common short messages and also longer system exclusive messages. The following sections give a general description of the types of messages implemented by the EQMan. For a specific description of the message formats, please see the appendix on MIDI Implementation.

Program Change Messages

The easiest MIDI command to send the EQMan is a Program Change message. Program Change messages select a program, in the range 0 through 16, from EQMan Rom. When the message is received and decoded by the EQMan driver, the selected Rom program is set on the EQ bands and also the volume controls.

NOTE: MIDI Program Change messages select EQ/volume programs defined in EQMan Rom. These are the same Rom programs that you set up using the EQMan Remote Control Software.

Programs 1 through 16 are the user-defined programs, and program 0 is always an EQ-Flat (bypass) setting. Program 0 is hard-coded and may not be modified.

Volume Control and Pan Messages

The EQMan driver accepts Volume and Pan Controller messages to set the output levels of the left and right channels. The standard pan values range from 0 to 127 with 0 being hard-left and 127 being hard-right. The overall volume is set by sending a volume controller message with a value in the range of 0 to 127, with 127 being the loudest setting and 0 the quietest. In order for the pan and volume settings to take effect, they must be written on the proper MIDI channel, that which is set up in the EQMan software driver.

Control Change Messages

The EQMan EQ bands may be set individually or in groups through MIDI Control Change messages. The EQMan implementation is fairly flexible and allows you to assign any MIDI controller number 102 through 119 (these are defined by the MIDI specification as user-defined) to any band of the EQMan EQ section. This assignment is done in the Windows driver's Advanced Setup dialog box. Once the assignments are made, any MIDI program can write a control change message to the EQMan on the proper MIDI channel (also set up in the driver Advanced Setup dialog) and control the EQ in real time! When sending a control change message, the actual setting should be in the range of 0 to 127, which refer to -12dB and +12dB, respectively.   0 dB is 64.

When assigning control numbers to EQ bands in the driver Advanced Setup dialog box, feel free to experiment with grouping EQ bands by controller number. The factory default configuration assigns the same controller number to a left frequency band as it does the corresponding right side band. This allows both the right and left band to be set simultaneously by the same controller message. You may assign totally different controller numbers to these bands and make them completely independent if you wish.

System Exclusive (Sysex) Messages

System Exclusive messages are used primarily in non-real time to setup or acquire information from the EQMan. For instance, your sequencer may allow you to request a dump of the entire contents of EQMan Rom. The request is made in the form of a sysex message. In turn, the data dumped from the EQMan back into your sequencer program is also in the form of a sysex message. Sysex messages may be stored as a part of a standard MIDI song file and used by the sequencer to initialize the EQMan to a specific state for use with that particular song.

Some General Thoughts About EQ

A lot of beginning audio engineers tend to misuse or overuse equalization. While it is one of the most important tools in an audio engineer's bag of tricks, like any other tool, there are some basic ground rules (like never put your hand in front of a buzz saw).

1. Signal-to-Noise is improved drastically when the input signal to the EQMan is a bit "hot". If your audio input signal is too weak, your output audio will have increased noise because of the reduced signal-to-noise ratio. Increase the volume going into the EQMan, but do not increase it to the point where distortion occurs.

2. Don't try to "fix" a sound with EQ when tracking. Always try other options first. When you're recording a track, try variations in mic placement, mic type, and room environment before resorting to EQ. You want the bare track to sound good without any effects or EQ. If you're recording at home, that acoustic guitar track might sound great recorded in the bathroom and the vocal track might work best in the kitchen. If you're recording synthesizers directly, don't be afraid to go into the synth's edit mode and tweak that sound a little to make it exactly what you want instead of "good enough". "We'll fix it in the mix" usually takes longer than getting it right in the first place. Not only that, it usually doesn't sound as good.

3. It is always better to cut than boost a frequency band. Every time you boost a frequency, you're also increasing the level of that track. By the time you finish boosting bands on all your tracks, you might be close enough to clipping that you've removed all the headroom. The gains of each band are relevant and interrelated -- if you want more highs in a track, try cutting the lows and mids instead of pushing that 15kHz fader up.

4. Don't use the same frequencies all the time. Sure a little 1.2kHz peaking makes that guitar cut thru, but don't do it on every song. You don't want everything to sound the same, do you?

5. Use the stereo mix field. A lot of instruments have fundamental frequencies in the same range. If they're all panned to the same position, you won't hear each instrument distinctly. What you might hear is a lot of mud. Small changes in stereo placement can pop something right out of the mix. If you absolutely have to have those two (or more) tracks in the same position (guitar and vocals are a great example, since they have almost identical fundamentals) you can cut between 800k and 2k a few dB on one to make the other clearer. With the EQMan, you can even use the automation features to undo the change to put the punch back for that killer solo.

6. EQ can be a great effect. Making a track sound like it was recorded over the phone or off an old 78 can make the difference between a OK track and an imaginative, compelling one. Just don't overuse it.

Once again, the EQMan automation features can enable you to add just a little and change it back before your listeners start yawning.

7. Use your ears! Some engineers will automatically set up a particular EQ for an instrument without listening to the specific instrument first. Listen first. Not all acoustic guitars sound the same; that's why some are worth thousands of dollars and others are good for emergency umbrellas. EQ for the specific instrument you are recording, not for the memory of some instrument you recorded in the past.

8. Cut some of the EQ bands that are out of the frequency range of the source material. In other words, if you are recording an electric bass only, you can usually reduce the gains on the upper frequencies, which are out of the frequency range of a bass. This will also serve to take out any upper frequency noise that might be recorded as part of the bass track. For vocals, reduce the low end gain to avoid pops and other annoying wind- and pressure-related vocal sounds.

9. Nothing is written in stone, including these rules. Once you've learned to use them, feel free to break them if it makes your final mix sound better. After all, isn't that the reason we're doing this in the first place?

Troubleshooting

If you are having problems using your **EQMan** it is probably a good idea to reread this manual and make sure you have properly installed the card. If you can't find the source of your difficulty check the following typical fixes:

SYMPTOM: The computer won't boot with the card in. Everything is fine without the card. (This may include strange error messages.)
SOLUTION: Run through the INSTALL procedure given above and make sure the card is recognized at the ADDRESS selected. You may have the card set at an address that conflicts with another installed card -- in that case, change the address setting of one of the cards.

SYMPTOM: My computer can't find the card when I run my sequencer program.
SOLUTION: You probably don't have the Windows driver properly installed or installed at all. Follow the instructions in this manual for Windows Driver Installation.

SYMPTOM: The card works fine with some of my programs but doesn't work with others.
SOLUTION: It is likely you don't have the EQMan driver installed properly to talk to your application. Check the set-up part of your MIDI application and make sure the EQMan driver is installed. Next, make sure that the driver is also set to the ADDRESS that matches the jumper settings on the EQMan card.

SYMPTOM: No Audio outputs.
SOLUTION: Inputs and Outputs are reversed or not plugged in. Check the cables to and from the unit. "Main In" is the topmost connector, "Main Out" the middle, and "Aux In" is the bottom connector. The jacks are clearly labeled on the flange of the board. Also be sure that the EQMan volume controls are not set to 0 or muted in software.

SYMPTOM: Audio is present but neither EQ nor Volume settings seem to affect the sound in any way.
SOLUTION: Incorrect Base Address selection in the Windows Driver or driver not installed. Open the driver setup and set the port address to match the address set on the EQMan hardware address jumpers.
SOLUTION: Hardware Speed may need adjusting in the Windows Driver. Do so from the Advanced Setup in the Windows Driver.

SYMPTOM: Audio is present, Volume control affects the sound, but not the EQ controls.
SOLUTION: You may be using Aux In instead of Main In. Aux In bypasses the EQ section of the board and is only controlled by the volume control.

SYMPTOM: Audio is present but distorted.
SOLUTION: Make sure the input signals are not too hot for the EQMan. Make sure the output volume setting of the EQMan is not too loud for whatever it's driving. Make sure the source material is not distorted itself.

SYMPTOM: The EQ seems erratic and confused when changing presets.
SOLUTION: Hardware Speed may need adjusting in the Windows Driver. Do so from the Advanced Setup in the Windows Driver.

SYMPTOM: Can not locate files for loading from a previously performed " File, Save".
SOLUTION: Files are being saved into the wrong subdirec-tory. When in the File Save or File Open dialog boxes, be sure to select the proper subdirectory before saving/opening a file.

SYMPTOM: The EQ is working OK except the output levels seem low even with faders in the full up position.
SOLUTION: Outputs from the EQ may be "loaded down" by speakers or a mismatched input level amplifier. The outputs from the EQ are designed for Line level (-10dB) outputs and require a pre amplifier. Try the Aux In of your stereo or a mixer with -10dB High Z inputs.
SOLUTION: Inputs to the EQ are too Low. The inputs to the EQ are designed for Line level (-10dB) inputs and require a pre amplifier. Try using the Effects Send output from your guitar amplifier or mixing board.

SYMPTOM: MIDI Control Change and other MIDI commands fail to change the individual EQ bands.
SOLUTION: Verify that these MIDI commands are being written to the proper MIDI Channel. The EQMan MIDI channel is set in the driver Advanced Setup dialog box. Also check to see that the controls you are sending data to match the ones set up in the Advanced Setup as well.

Appendix — MIDI Implementation

The following MIDI message(s) control the current EQMan program:

Program Change Message

   CnH, 0pH, where: n is MIDI Channel (0..15),
                                        p is the Rom program number (0..16).

The following MIDI message(s) control the output levels of the EQMan:

Volume Controller Message

   BnH, 07H, 0vH, where: n is MIDI Channel (0..15),
                                    07H is the volume controller number,
                                    v is the volume (0..127).

Pan Control Message

   BnH, 0AH, 0pH, where: n is MIDI Channel (0..15),
                                    0AH is the pan controller number,
                                    p is the pan (0..127),
                                          0=left, 64=middle, 127=right.

The following MIDI message(s) control the EQ bands of the EQMan:

Controller Change Message

   BnH, 0cH, 0gH, where: n is MIDI Channel (0..15),
                                    c is the controller number (102..119),
                                    g is the EQ band gain (0..127),
                                    0=-12dB, 40H=0dB, 7FH=+12dB.

The following system exclusive messages request data from EQMan:

Identity Request
Requests the identity of the attached MIDI device.   The EQMan responds with an Identity Message.

                    F0H, 7EH, 0nH, 06H, 01H, F7H
   where n is MIDI Channel (0..15, 7FH=all).

Current EQ/Volume Request
Requests the settings of all EQ bands and both volume controls.

     F0H, 00H, 01H, 05H, 01H, 00H, 01H, 00H, 0nH, 41H, F7H
       where: n is MIDI Channel (0..15, 7FH=all).

One Rom Program Request
Requests the contents of one EQMan Rom program location.

F0H, 00H, 01H, 05H, 01H, 00H, 01H, 00H, 0nH, 42H, 0pH, F7H
  where: n is MIDI Channel (0..15, 7FH=all),
        p is the Rom program number (0..16).

Dump All Request
Requests the current settings of all EQ bands and both volume controls,
plus the contents of all EQMan Rom programs. The response is several
sysex messages: sixteen One Rom Program Data messages followed by
one Current EQ/Volume Data message.

F0H, 00H, 01H, 05H, 01H, 00H, 01H, 00H, 0nH, 43H, F7H
  where: n is MIDI Channel (0..15, 7FH=all).

The following system exclusive message is transmitted by the EQMan
in response to an Identity Request sysex message:

Identity Message
Identifies the MIDI device as an EQMan.

F0H	Non-realtime sysex message header.
7EH	
0nH	n = midi channel (0..15, or 7Fh for all)
06H	General information message.
02H	Identity reply.
00H	Midiman manufacturer's code 00,01,05.
01H	
05H	
01H	Device family code 0001H.
00H	
01H	Device family member code 0001H.
00H	
VLH	Software version LSB.
VMH	Software version MSB.
RLH	Software revision LSB.
RMH	Software revision MSB.
F7H	End of sysex.

The following system exclusive message(s) may be written to the
EQMan or transmitted by the EQMan in response to a request:

Current EQ/Volume Data Message
Contains current settings of the EQ bands and volumes. For EQ gain codes, see Table 1 below.

F0H	Sysex message.
00H	Midiman manufacturer's code 00, 01, 05.
01H	
05H	
01H	Device family code 0001H.
00H	
01H	Device family member code 0001H.
00H	
0nH	n = midi channel (0..15, or 7Fh for all)
01H	Opcode 1 (current EQ/Volume Data).
lvH	Left volume (0..127).
rvH	Right volume (0..127).
eqH	Left 60Hz EQ band gain.
eqH	Left 160Hz EQ band gain.
eqH	Left 400Hz EQ band gain.
eqH	Left 1000Hz EQ band gain.
eqH	Left 2500Hz EQ band gain.
eqH	Left 6300Hz EQ band gain.
eqH	Left 15000Hz EQ band gain.
eqH	Right 60Hz EQ band gain.
eqH	Right 160Hz EQ band gain.
eqH	Right 400Hz EQ band gain.
eqH	Right 1000Hz EQ band gain.
eqH	Right 2500Hz EQ band gain.
eqH	Right 6300Hz EQ band gain.
eqH	Right 15000Hz EQ band gain.
F7H	End of sysex.

One Rom Program Data Message
Contains current settings of the specified EQMan Rom program. For EQ gain codes, see Table 1 below. If the program name is less than 16 characters, pad the end with 0's.

F0H	Sysex message.
00H	Midiman manufacturer's code 00, 01, 05.
01H	
05H	
01H	Device family code 0001H.
00H	
01H	Device family member code 0001H.
00H	
0nH	n = midi channel (0..15, or 7Fh for all)
02H	Opcode 2 (One Rom Program Data).
0pH	Program number (0..16).
lvH	Left volume (0..127).
rvH	Right volume (0..127).
eqH	Left 60Hz EQ band gain.
eqH	Left 160Hz EQ band gain.
eqH	Left 400Hz EQ band gain.
eqH	Left 1000Hz EQ band gain.

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eqH        Left 2500Hz EQ band gain.
eqH        Left 6300Hz EQ band gain.
eqH        Left 15000Hz EQ band gain.
eqH        Right 60Hz EQ band gain.
eqH        Right 160Hz EQ band gain.
eqH        Right 400Hz EQ band gain.
eqH        Right 1000Hz EQ band gain.
eqH        Right 2500Hz EQ band gain.
eqH        Right 6300Hz EQ band gain.
eqH        Right 15000Hz EQ band gain.
nmH        Program Name character 1.
nmH        Program Name character 2.
nmH        Program Name character 3.
nmH        Program Name character 4.
nmH        Program Name character 5.
nmH        Program Name character 6.
nmH        Program Name character 7.
nmH        Program Name character 8.
nmH        Program Name character 9.
nmH        Program Name character 10.
nmH        Program Name character 11.
nmH        Program Name character 12.
nmH        Program Name character 13.
nmH        Program Name character 14.
nmH        Program Name character 15.
nmH        Program Name character 16.
F7H        End of sysex.
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Table 1. EQ Gain Codes for MIDI System Exclusive Messages

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0CH = +12 dB
0AH = +10 dB
08H = +8 dB
06H = +6 dB
04H = +4 dB
02H = +2 dB
00H = 0 dB
7EH = - 2 dB
7CH = - 4 dB
7AH = - 6 dB
78H = - 8 dB
76H = - 10 dB
74H = - 12 dB
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Limited Lifetime Warranty

MIDIMAN warrants that this product is free of defects in materials and workmanship under normal use so long as the product is owned by the original purchaser and that purchaser has registered his/her ownership of the product by sending in the completed warranty card.

In the event that MIDIMAN receives written notice of defects in materials or workmanship from such an original purchaser, MIDIMAN will either replace the product, repair the product, or refund the purchase price at its option. In the event any repair is required, shipment to and from MIDIMAN and a nominal handling charge shall be born by the purchaser. In the event that repair is required, a Return Authorization number must be obtained from MIDIMAN. After this number is obtained, the unit should be shipped back to MIDIMAN in a protective package with a description of the problem and the Return Authorization clearly written on the package.

In the event that MIDIMAN determines that the product requires repair because of user misuse or regular wear, it will assess a fair repair or replacement fee. The customer will have the option to pay this fee and have the unit repaired and returned, or not pay this fee and have the unit returned unrepaired.

The remedy for breach of this limited warranty shall not include any other damages. MIDIMAN will not be liable for consequential, special, indirect, or similar damages or claims including loss of profit or any other commercial damage, even if its agents have been advised of the possibility of such damages, and in no event will MIDIMAN's liability for any damages to the purchaser or any other person exceed the price paid for the product, regardless of any form of the claim. MIDIMAN specifically disclaims all other warranties, expressed or implied. Specifically, MIDIMAN makes no warranty that the product is fit for any particular purpose.

This warranty shall be construed, interpreted, and governed by the laws of the state of California. If any provision of this warranty is found void, invalid or unenforceable, it will not affect the validity of the balance of the warranty, which shall remain valid and enforceable according to its terms. In the event any remedy hereunder is determined to have failed of its essential purpose, all limitations of liability and exclusion of damages set forth herein shall remain in full force and effect.